

BACnet Gateway Installation/Operation Manual

Fire Alarm System Limitations

While a fire alarm system may lower insurance rates, it is not a substitute for fire insurance!

An automatic fire alarm system—typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control with remote notification capability—can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or "smoke" from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets.
- Smoke particles may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of

flammable materials, etc.).

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. *Heat detectors are designed to protect property, not life.*

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol or medication. Please note that:

- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

The most common cause of fire alarm malfunction is inadequate maintenance. To keep the entire fire alarm system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of Chapter 7 of NFPA 72 shall be followed. Environments with large amounts of dust, dirt or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled monthly or as required by National and/or local fire codes and should be performed by authorized professional fire alarm installers only. Adequate written records of all inspections should be kept.

Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

WARNING - Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until this manual is read and understood.

CAUTION - *System Reacceptance Test after Software Changes.* To ensure proper system operation, this product must be tested in accordance with NFPA 72 Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49° C/32-120° F and at a relative humidity of 85% RH - 93% per ULC - (non-condensing) at 30° C/86° F. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and all peripherals be installed in an environment with a nominal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning-induced transients. Although no system is completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. *Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes.* Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

Though designed to last many years, system components can fail at any time. This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static-suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation by authorized personnel.

FCC Warning

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his own expense.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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SECTION ONE: BACNET GATEWAY FEATURES

1.1 PRODUCT DESCRIPTION

The BACnet Gateway provides an interface between networks that use the BACnet communication protocol and **NOTI•FIRE•NET™** resident Fire Alarm Control Panels (FACPs). The BACnet protocol is an American National Standard (ANSI/ASHRAE 135-1995).

This document describes the installation and configuration of the BACnet Gateway using the Serial Configuration Tool. The Gateway represents physical fire devices as BACnet objects. As events occur, the object properties are updated in realtime, and messages are sent to the appropriate BACnet report destination. BACnet clients may make requests to read *properties* of the BACnet objects. These properties reflect particular values of the device status and programming. The user subscribes to Event Notification objects per FACP, and the BACnet device receives events from objects on the FACP as a result of this subscription.

BACnet clients communicate with the Gateway using BACnet/IP. **NOTI•FIRE•NET™** communicates with the Gateway via direct connection for single panel interfaces or via an NCM-W/F for network interfaces.

The Gateway application manages the BACnet object database and communication between a BACnet workstation and the **NOTI•FIRE•NET™** network. The Serial Configuration Tool, an offline programming utility, is used to configure the BACnet Gateway and is installed onto the PC or laptop being used for Gateway configuration.

1.2 BACNET GATEWAY/SERIAL CONFIGURATION TOOL FEATURES

Below are some of the features of the BACnet Gateway and Serial Configuration Tool.

- Compatible with ONYX series panels (NFS-3030, NFS-640), AFP1010, AM2020, NCS and NCA
- Multiple Gateways can be used for large networks (greater than 15 panels/15,000 objects)
- Use of Telnet, FTP, and EIA-232 port for configuration
- Ability to use Windows 98 or Windows NT/2000 Operating Systems for the Serial Configuration Tool
- Serial Configuration Tool runs on any laptop or PC using a Windows OS and having an open COM port
- Serial Configuration Tool displays Gateway configuration information on startup

NOTE: This manual is written with the understanding that the user is trained in BACnet operations and services. The information provided here is solely for the configuration of the Gateway to communicate event information to an existing BACnet network.

1.3 RELATED DOCUMENTATION

Below is a list of **NOTI•FIRE•NET™** related documentation.

For information on...	Refer to...	Part No.
Compatible Devices	Device Compatibility Document	15378
Cabinets & Chassis	CAB-3/CAB-4 Series Installation Document	15330
Auxiliary Power Supplies & Battery Chargers	ACPS-2406 Installation Manual	51304
Networking	NOTI•FIRE•NET™ Manual	51584
	NCM-W/F Installation Document	51533
	MIB Media Interface Board	50255
	NCS Network Control Station	51095
	NCA Network Control Annunciator	51482

Table 1.3-1: Related Documentation

1.4 STANDARDS AND SPECIFICATIONS

The BACnet Gateway has been designed to comply with standards set forth by the following regulatory agencies:

- Underwriters Laboratories Standard UL 864
- NFPA 72 National Fire Alarm Code
- CAN/ULC - S527-M99 Standard for Control Units for Fire Alarm Systems
- ANSI/ASHRAE 135-1995

The contents of this manual are important and must be kept in close proximity of the hardware. If building ownership is changed, this manual and all other testing and maintenance information must also be passed to the current owner of the facility. A copy of this manual was shipped with the equipment and is also available from the manufacturer.

WARNING: *Improper installation, maintenance, or lack of routine testing could result in system malfunction.*

NOTE: *Refer to Appendix A for the BACnet PIC statement.*

1.5 COMPATIBILITY

The BACnet Gateway version 1.0 is compatible with **NOTI•FIRE•NET™** version 4.0 and later; the BACnet Gateway version 2.0 is compatible with **NOTI•FIRE•NET™** version 5.0 and later.

The BACnet Gateway is compatible with the following **NOTI•FIRE•NET™** devices: NFS-640, NFS-3030, NCA, NCS, and AM2020/AFP1010.

The BACnet front end must conform to BACnet Standard Annex J for IP and support Device Objects, Binary Output Objects, and Multistate Input or Life Safety Points/Zones. It is also required to write to Notification Objects and receive confirmed/unconfirmed event notification messages. For details, refer to the PIC statement in Appendix A.

1.6 SYSTEM REQUIREMENTS

The BACnet Gateway can monitor up to fifteen panels, but the combined object count across the monitored panels cannot exceed 15,000 objects. This includes all detectors, monitor modules, control modules, bell circuits, etc.

The computer on which the Serial Configuration Tool resides must use Windows 98 or Window NT v4.0 or later. The computer must also have a non-dedicated serial port for communicating with the Gateway.

Refer to the **NOTI•FIRE•NET™** manual for details about wiring limitations.

1.7 SYSTEM ARCHITECTURE

SINGLE PANEL ARCHITECTURE



NOTE: *The BACnet workstation is not intended as a primary annunciator and is ancillary in nature.*

The BACnet Gateway assembly can connect directly to a single compatible Fire Alarm Control Panel (FACP).



NOTE: *When the Gateway connects directly to an ONYX series panel, configuration settings on the Serial Configuration Tool NCM tab are not applicable.*

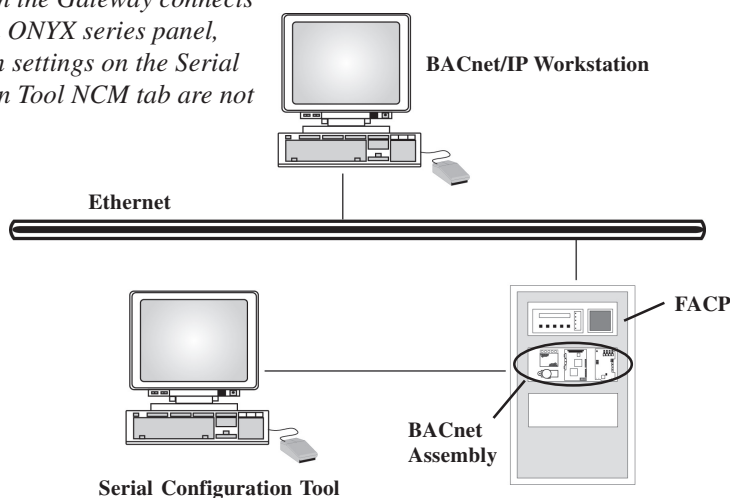


Figure 1.7-1: BACnet Single Panel Diagram

All wiring from the power supply is power limited, and a separation of at least ¼" (6.35 mm) must be maintained between power limited and non-power limited wiring.

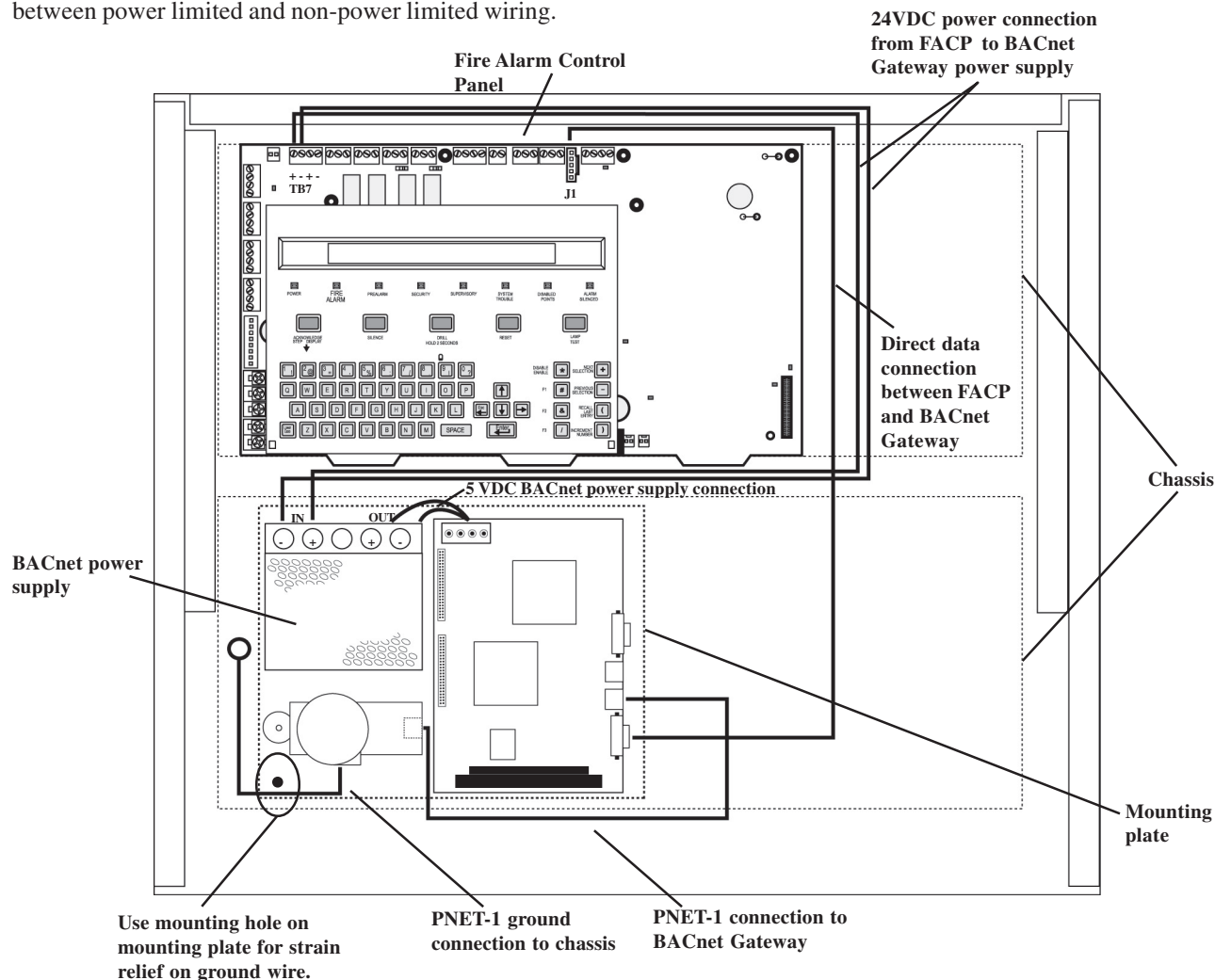


Figure 1.7-2: Typical Wiring Diagram for CAB-3/CAB-4 Series Enclosures



NOTE: All BACnet Gateway circuits are power limited. Route wiring per the power limited and non-power limited constraints defined in the pertinent Fire Alarm Control Panel manual.

NETWORK ARCHITECTURE

The diagram below shows the end-to-end architecture of a system using the BACnet Gateway:



For details on wiring the NCM or MIB to the network, refer to the **NOTI•FIRE•NET™** manual.

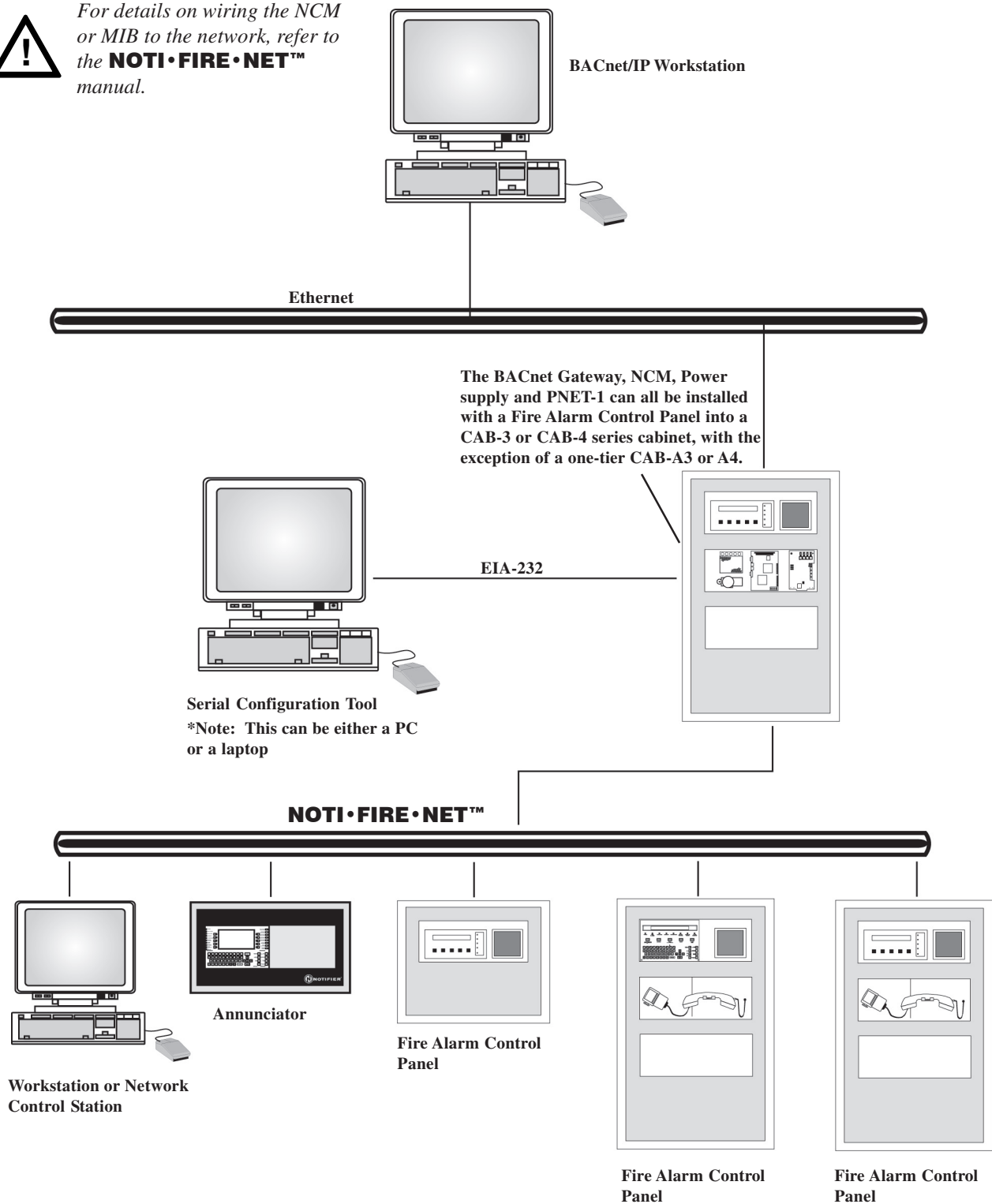


Figure 1.7-3: BACnet Network Diagram

SECTION TWO: BACNET GATEWAY INSTALLATION

2.1 BACNET GATEWAY REQUIRED COMPONENTS

The BACnet Gateway requires the following:

- PC board (P/N 46173) for the BACnet Gateway
 - NCM-W/F Network Communications Module - used to facilitate network communication between the BACnet Gateway and **NOTI•FIRE•NET™**.
 - Power supply (P/N 46175) - 24VDC to 5VDC
 - PNET-1 surge suppressor
 - DB9 to NUP Cable (P/N 75554) - connects the BACnet Gateway to an NCM-W/F.
 - NUP to 24V power cable (P/N 75583) - provides power for the NCM-W/F.
 - HDD Power connector (P/N 75581) - used for 24VDC to 5VDC power connection
 - The Serial Configuration Tool software (supplied on CD-ROM)
 - RJ45 to RJ45 standard Ethernet network cable (P/N 75585) - provides connection from BACnet PC board to PNET-1 surge suppressor
- PC to PC connector cable - connects the BACnet Gateway to a PC or laptop.
 - PC or notebook - used to configure the BACnet Gateway.
 - RJ45 to RJ45 standard Ethernet network cable - provides connection from PNET-1 surge suppressor to BACnet front end

NOTE: These items must be supplied by the customer.

CABINETRY/INSTALLATION HARDWARE

- CAB-3/CAB-4 series cabinet
- CHS-4L chassis
- BACnet Gateway/Power Supply Mounting Plate (P/N 18541)

2.2 INSTALLATION OVERVIEW

Use the following checklist as a guideline for assembling the hardware and making necessary cable connections. The sections that follow provide details on making these connections.

CAUTION: *Different sources of power are used in conjunction with the BACnet Gateway product. Disconnect all sources of power before servicing. This device and associated equipment may be damaged by removing and/or inserting cards, modules or interconnecting cables while this unit is powered. This damage may adversely affect the operation of this unit, but its effect may not be readily apparent.*

Gateway Assembly Checklist	
Hardware Assembly	
Install Gateway PC board onto mounting plate.	<input type="checkbox"/>
Install power supply onto mounting plate.	<input type="checkbox"/>
Install PNET-1 onto mounting plate.	<input type="checkbox"/>
Install assembly into cabinet	<input type="checkbox"/>
Install NCM (if applicable)	<input type="checkbox"/>
Cable Connections	
Gateway Serial Connection to NCM or FACP (P/N 75554)	<input type="checkbox"/>
Gateway Power Connection (P/N 75581)	<input type="checkbox"/>
Gateway Category 5 Network Cable Connection (P/N 75585)	<input type="checkbox"/>
PNET-1 Surge Suppressor Connection	<input type="checkbox"/>
NCM-W/F Power Connection (if applicable)	<input type="checkbox"/>
NCM-W/F Data Connection (if applicable)	<input type="checkbox"/>

Figure 2.2-1: Gateway Assembly Checklist

2.3 INSTALLING THE BACNET GATEWAY ASSEMBLY INTO A CAB-4 SERIES CABINET

This section describes the installation of the BACnet Assembly into a CAB-3/CAB-4 series cabinet.



NOTE: Cabinet is ordered separately. For installation details, refer to the CAB-3/CAB-4 Series Installation Document, 15330.

1. The BACnet Gateway, power supply and PNET-1 surge suppressor are installed onto the mounting plate. The Gateway board uses four standoffs, the power supply uses two screws, and the PNET-1 uses one.

2. The mounting plate is installed onto the CHS-4(L).

3. The CHS-4(L) is installed into the CAB-3 or CAB-4 series cabinet.

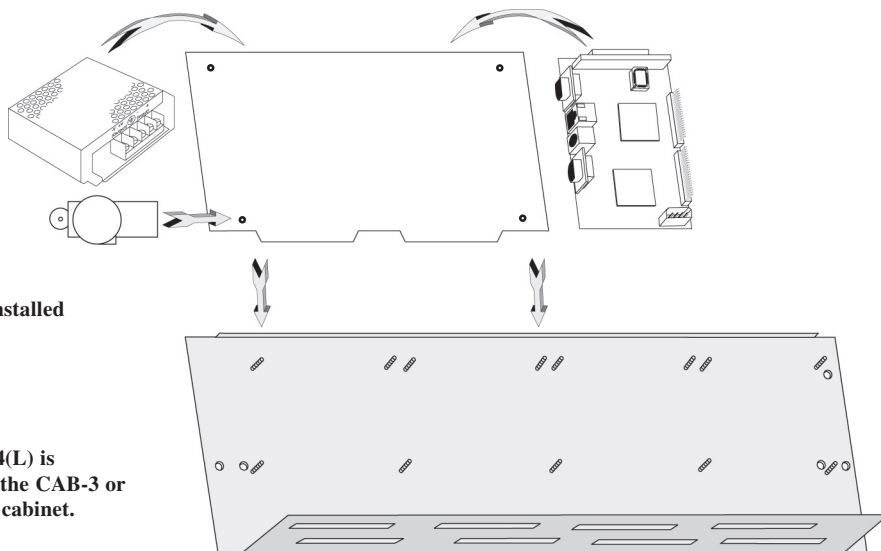


Figure 2.3-1: Gateway Installation Diagram

2.4 GATEWAY PC BOARD LAYOUT

The PC board layout (P/N 46173) is shown in Figure 2.3-1 below. Descriptions of pertinent connections are described in subsequent sections.

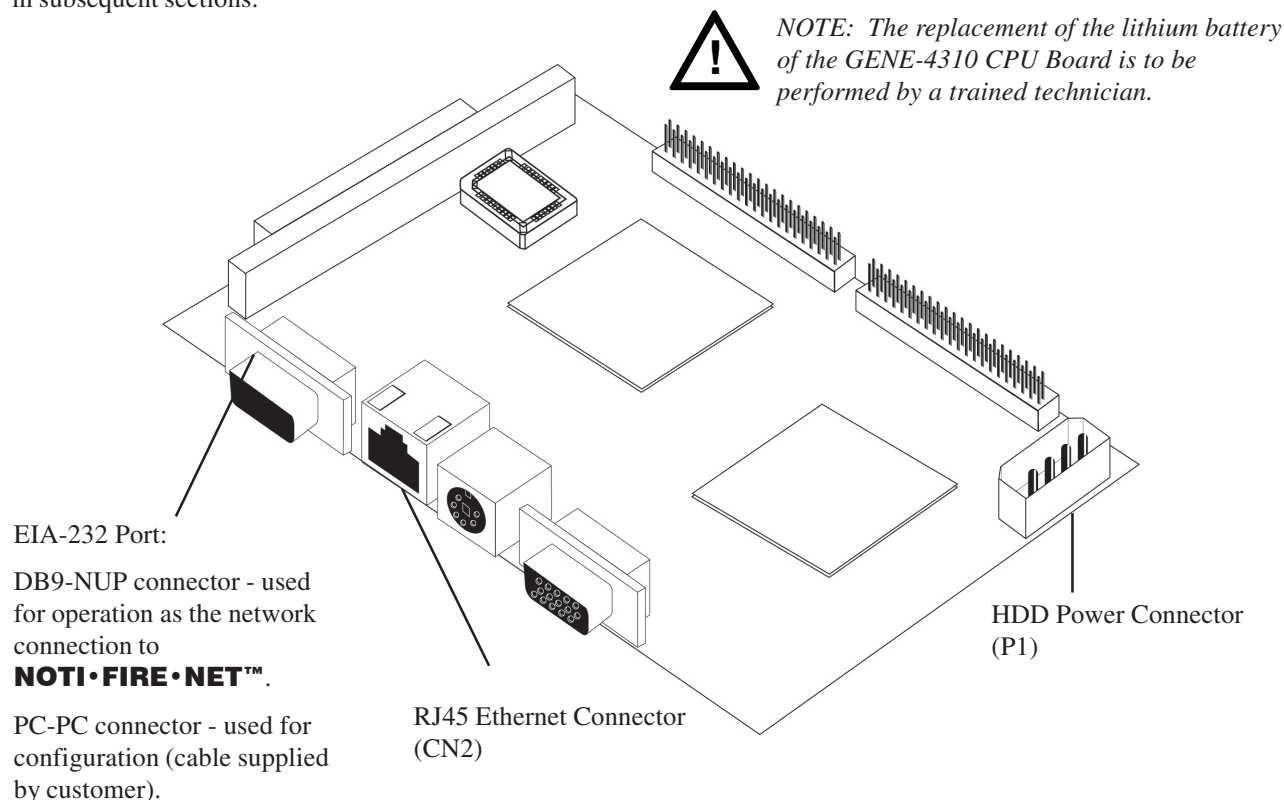


Figure 2.4-1: PC Board Layout

2.5 POWER SUPPLY CONNECTIONS

The power supply for the BACnet Gateway is a 24VDC-to-5VDC unit (P/N 46175). When using an NCM-W/F, it can be powered by a Notifier Fire Alarm Control Panel (FACP) or an external power supply. For details on powering and connecting an NCM-W/F, refer to its Product Installation Document 51533.

	TYPICAL	MIN	MAX
Input Voltage	24V	19V	29V
Input Current @24V			360mA without NCM 450 mA with NCM
Output Voltage	5V	4.8V	5.2V
Output Current @5V			1.2A

Figure 2.5-1: 46175 Power Supply Specifications

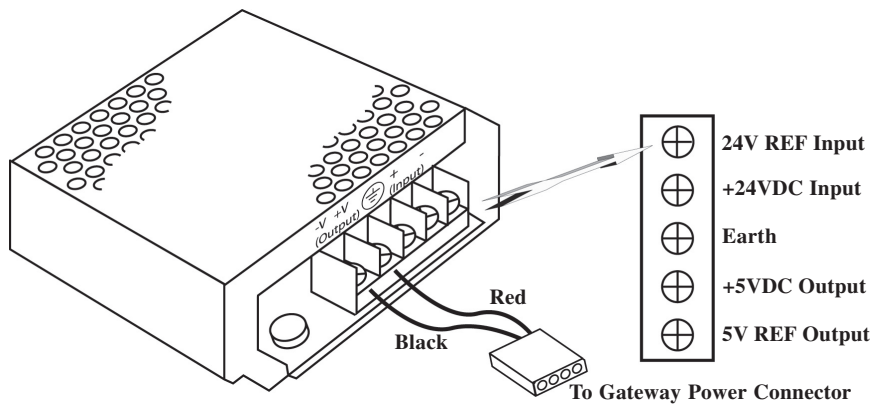
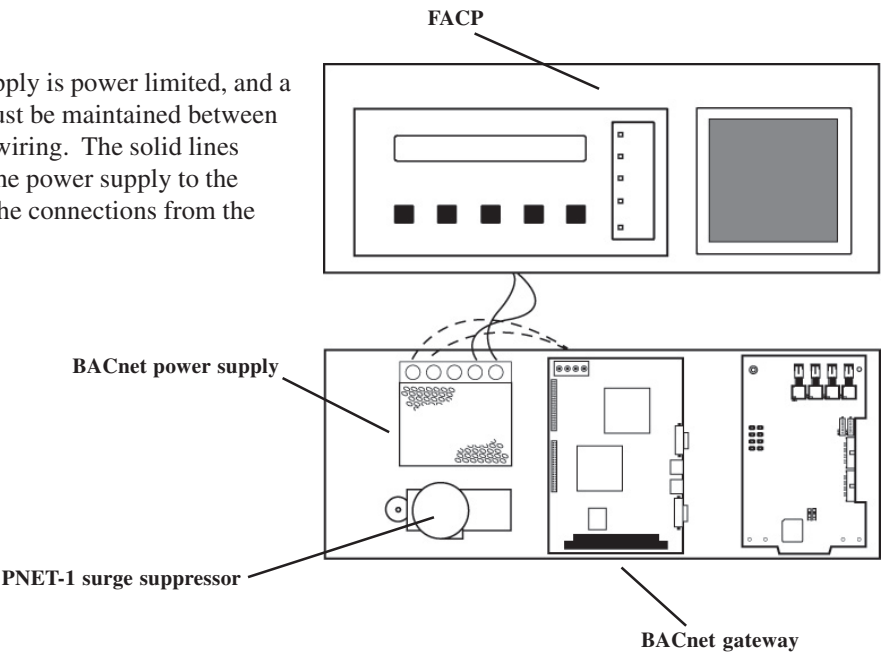


Figure 2.5-2: BACnet Gateway Power Connection

All wiring from the BACnet power supply is power limited, and a separation of at least ¼” (6.35 mm) must be maintained between power limited and non-power limited wiring. The solid lines represent the power connection from the power supply to the FACP, and the dashed line represents the connections from the power supply to the BACnet Gateway.



2.6 DB-9 TO NUP CONNECTION (GATEWAY TO NCM-W/F)

Connecting the BACnet Gateway to an NCM-W/F allows the Gateway to communicate with devices on the **NOTI•FIRE•NET™** network. Use the NCM-W for use with twisted pair wire and NCM-F for use with fiber-optic cable. Make the connection according to Figure 2.6-1 below:



NOTE: If connected directly to an ONYX series panel, the Gateway will use the network node number programmed in the panel for addressing.

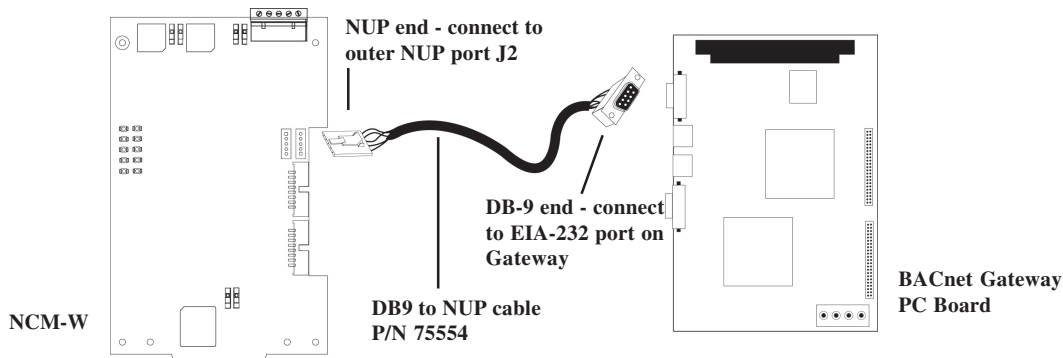


Figure 2.6-1: DB-9 to NUP Connection

2.7 PC TO PC CONNECTION

This connects the BACnet Gateway to a PC that has the Serial Configuration Tool installed on it. This connection is used when configuring the Gateway using the Serial Configuration Tool.



NOTES: Cable must be supplied by customer and must be a null-modem cable.

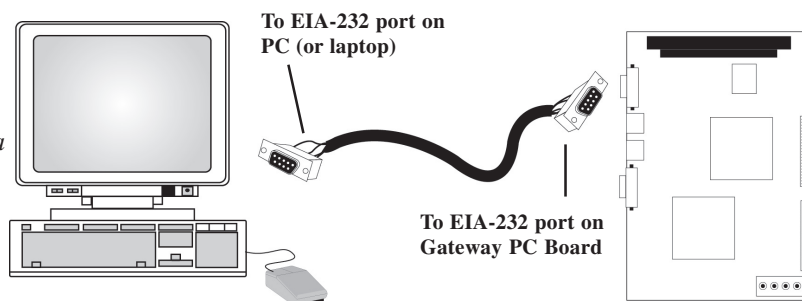


Figure 2.7-1: PC to PC Serial Connection

2.8 ETHERNET NETWORK CONNECTION

The RJ45-to-RJ45 Ethernet network cable (P/N 75585) connects the NOTIFIER BACnet Gateway to the PNET-1 surge suppressor; another customer supplied cable goes from the PNET-1 out to the BACnet front end. This is the connection that facilitates communication between the **NOTI•FIRE•NET™** network and the BACnet network. Once the Gateway is on the network, it will appear as the NCS device type (network version 4.0) or BACnet Gateway device type (version 5.0 networks).



NOTE: Cable to BACnet front end must be supplied by customer.

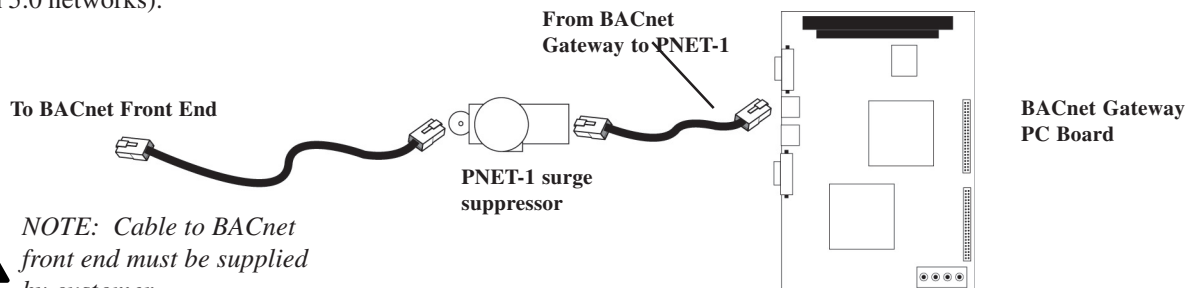


Figure 2.8-1: Ethernet Connection

SECTION THREE: CONFIGURATION AND OPERATION

3.1 BACNET GATEWAY SOFTWARE INSTALLATION

The Serial Configuration Tool software is supplied on CD-ROM. To install the application onto the PC or laptop, follow these steps:

1. Insert the CD-ROM into the CD-ROM drive.
2. From Windows Explorer or the Run command, execute setup.exe from the root directory of the CD-ROM.
3. This will execute the install application. Simply follow the directions on screen to install the Serial Configuration Tool.
4. Once it is installed, it can be started from the Start Menu in the BACnet Gateway program group.

3.2 USING THE SERIAL CONFIGURATION TOOL

Make configuration settings according to the following order, and refer to the corresponding sections for details:

1. COM settings - section 3.3.
2. Gateway settings - section 3.4.
3. Using the Multi tab to configure multiple Gateways - section 3.5.
4. Network settings - section 3.6.
5. BACnet front end settings - section 3.7.

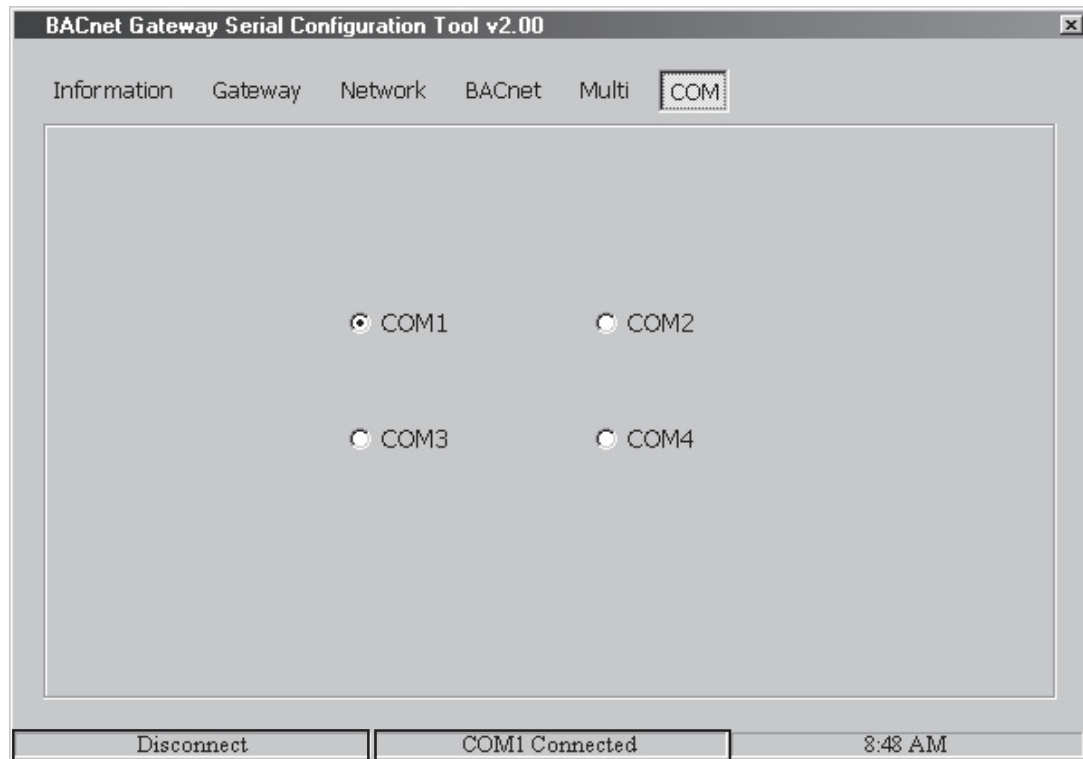
The other screen in the Serial Configuration Tool is the Information tab. This is a view screen only. The only action you can perform from this screen is either Connect or Disconnect.

NOTE: All tabs have the **Connect/Disconnect** button, located in the status bar at the bottom left.

3.3 SERIAL CONFIGURATION TOOL COM SETTINGS

COM settings must be configured first for the Gateway to begin communicating with the Serial Configuration Tool. The BACnet Gateway provides the user with four COM port options to use for connection to the Gateway. If your computer contains fewer than four COM ports, only the ones that exist on that computer will be options on this screen.

- Select a non-dedicated COM port that you will use to configure the Gateway.
- Once you select a COM port, it will be displayed in the bottom middle message box.
- Click on the bottom left pane to connect to the Gateway.



Connect/Disconnect button - After configuration settings have been made, click here to connect to the Gateway.

When finished, click Disconnect.

Connection Status message box - This tells the user whether the Gateway is connected and which COM it is using.

Figure 3.3-1: The COM Tab

3.4 BACNET GATEWAY CONFIGURATION

Delete - Deletes the Gateway's BACnet database. This is useful if you have made significant changes to your network, such as re-addressing devices.

FTP/TELNET REMOTE LOGIN

The user name/password configured here is used to access Telnet and ftp operations.

Remote Login: user name - Maximum of 40 alphanumeric characters. The factory default username is "target."

password - Maximum of 40 alphanumeric characters. The factory default password is "password."

Both the user name and password are case sensitive, and neither can use spaces.



NOTES: The password must be greater than seven characters.

Leave the user name field blank to keep the default or current user logged in.

Apply - Clicking Apply will implement any configuration changes made from this tab.

The screenshot shows the 'BACnet Gateway Serial Configuration Tool v2.00' window with the 'Gateway' tab selected. The window has a menu bar with 'Information', 'Gateway', 'Network', 'BACnet', 'Multi', and 'COM'. The main area contains a 'Delete' section with radio buttons for 'Yes' and 'No' (selected), and a warning message: 'Warning: Deleting database will reboot Gateway'. Below this is the 'FTP/Telnet Remote Login' section, which includes a 'Current User name' field with the value 'target', and 'New User name' and 'Password' fields, both empty. An 'Apply' button is located at the bottom of the main area. The status bar at the bottom shows 'Disconnect', 'COM1 Connected', and '10:31 AM'.

Figure 3.4-1: The Gateway Tab

3.5 THE MULTI TAB

The options on the Multi tab are used to configure an individual Gateway on a multi-Gateway system. The Source List on the left contains all the possible **NOTI•FIRE•NET™** node addresses (range 1-240). You can then specify which of these addresses the Gateway will monitor. Each Gateway can support up to 15 panels.

Check **Multiple Gateways** if there is more than one Gateway on the network. Then, click once on the address you wish to add to the network. Clicking this address again will alternately remove it from the list. Once the desired addresses appear in the field at the right, click on **Apply** to complete this process.

IMPORTANT: *If you have more than fifteen panels, in order to put them into desired groups, you must configure multiple Gateways offline, before they are ever connected to the network. Otherwise, the Gateway will find the first fifteen that come online and ignore the rest.*



NOTE: If you have fifteen or fewer panels, configuration settings on the Multi tab are unnecessary.

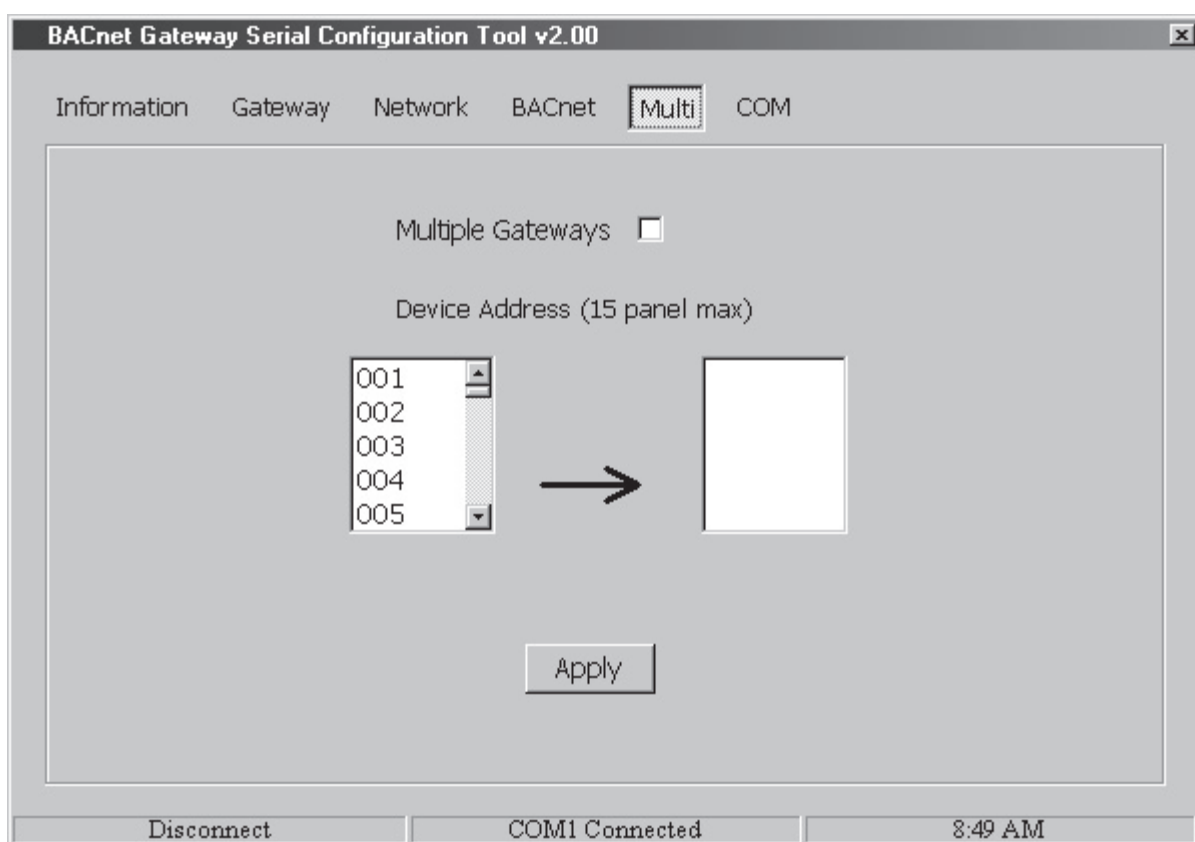


Figure 3.5-1: The Multi Tab

3.6 NETWORK SETTINGS

Gateway IP, Routing IP and Subnet Mask - Enter the unique static IP address used to identify the Gateway on the network. Consult your network administrator, if necessary, for obtaining a static IP address. **NOTE: Contact your network administrator to obtain the Routing IP and Subnet Mask values.**

IMPORTANT: *If you change the IP address, you need to make sure your Telnet session is not running.*

When the Gateway is initially installed, you must manually specify the NCM address. After this initial configuration, the Gateway will be able to retrieve this address, even when the NCM becomes disconnected from the network or is powered down for any reason. The only time the address would have to be manually reconfigured would be if the Gateway's database is ever deleted (see section 3.4).

Make the Threshold settings so they correspond to the settings on the physical board itself. For details about the NCM board and corresponding thresholds, refer to the Network Control Module (NCM) manual, 51533.

Network Update - Enter the daily time that the Gateway will request to update object properties for all devices on the **NOTI•FIRE•NET™** network. Data gathered includes device descriptions, detection of newly installed objects and other properties that may have been changed during the day but not updated.

Apply - Clicking on **Apply** will implement any changes made on this screen.



NOTE: *If the Gateway connects directly to an ONYX series panel, the NCM address is not used. However, you must manually assign a node number at the panel to which the Gateway is connected.*

The screenshot shows the 'BACnet Gateway Serial Configuration Tool v2.00' window with the 'Network' tab selected. The window has a menu bar with 'Information', 'Gateway', 'Network', 'BACnet', 'Multi', and 'COM'. The main area is divided into two sections: 'IP Configuration' and 'NCM Configuration'. The 'IP Configuration' section has three rows of four input boxes each: 'Gateway IP' (19, 60, 77, 4), 'Routing IP' (19, 9, 25, 6), and 'Subnet Mask' (255, 255, 255, 0). The 'NCM Configuration' section has an 'NCM Address' input box (089) and two 'Threshold' sections (A and B), each with 'High' and 'Low' radio buttons. Below these is a 'Network Update' section with three input boxes (22, 00, 00) and an 'Apply' button. To the right of the 'Network Update' section is a text box explaining the format: 'The format for the Network Update time setting is HH:MM:SS, where the hour field is denoted in military time.' At the bottom of the window are three status boxes: 'Disconnect', 'COM1 Connected', and '10:34 AM'.

When you click **Apply**, the time displayed here is the time used to set the Gateway. Once the Gateway's time has been synchronized, it will then synchronize all other **NOTI•FIRE•NET™** devices at the next Network Update time and on the hour.

Figure 3.6-1: The Network Tab

3.7 BACNET SETTINGS

These are BACnet specific configuration settings.

Network Number - The BACnet Network number indicates the subnet of the BACnet network on which the Gateway resides.

Primary BACnet/Secondary BACnet Ports - The Primary and Secondary BACnet ports indicate the IP port numbers on which the Gateway communicates.

Foreign Device - Check this option if a BACnet Broadcast Management Device (BBMD) is used between the BACnet Gateway and the front end.

BBMD IP - Enter the IP address of the BBMD here.

BACnet Port - Enter the port on which the BBMD communicates

Register Time - Enter the frequency (in seconds) used by the BACnet Gateway to send the “Register Foreign Device” message to the specified BBMD.

Detectors/Modules/Zones - Select Life Safety or MultiState according to the type(s) that the BACnet front end supports.

Apply - Click **Apply** to implement any changes made on this screen.



NOTE: These values must be obtained from a BACnet front end workstation. Therefore, they will correspond to the BACnet front end settings and will be specific to your network.

The screenshot shows the 'BACnet Gateway Serial Configuration Tool v2.00' window with the 'BACnet' tab selected. The window has a menu bar with 'Information', 'Gateway', 'Network', 'BACnet', 'Multi', and 'COM'. The main area is divided into several sections:

- Network Number:** 01001
- Primary BACnet Port:** 47808
- Secondary BACnet Port:** 05001
- Foreign Device:** ☒ (checked)
- BBMD IP:** 199 . 62 . 76 . 40
- BACnet Port:** 47808
- Register time:** 010
- Detectors/Modules:** ☐ Life Safety, ☒ MultiState
- Zones:** ☐ Life Safety, ☒ MultiState

At the bottom center is an 'Apply' button. The status bar at the bottom shows 'Disconnect', 'COM1 Connected', and '10:37 AM'.

Figure 3.7-1: The BACnet Tab

3.8 BACNET INFORMATION TAB

Once the Gateway has been configured, click on the Information tab to verify connection and configuration settings were successful. If the Gateway is connected, there will be data on this screen.

VxWorks: - This specifies the version number of the operating system running on the Gateway.

Gateway Version: - This line displays the version number of the **NOTI•FIRE•NET™** BACnet Gateway.

Gateway IP Address: *XXX.XXX.XXX.XXX* - This is the user-assigned static network IP address of the BACnet Gateway.

NCM Version: - This is the NCM software version. It is only displayed after the NCM has been online with the Gateway.

BACnet Network Number - This displays the subnet of the BACnet network on which the Gateway resides.

Secondary BACnet Port - If a secondary IP port is used, it will be displayed here.

Multiple Gateways - This is a True/False value that indicates the presence or absence of multiple BACnet gateways.

Gateway Time - This is the time as reported by the BACnet Gateway.

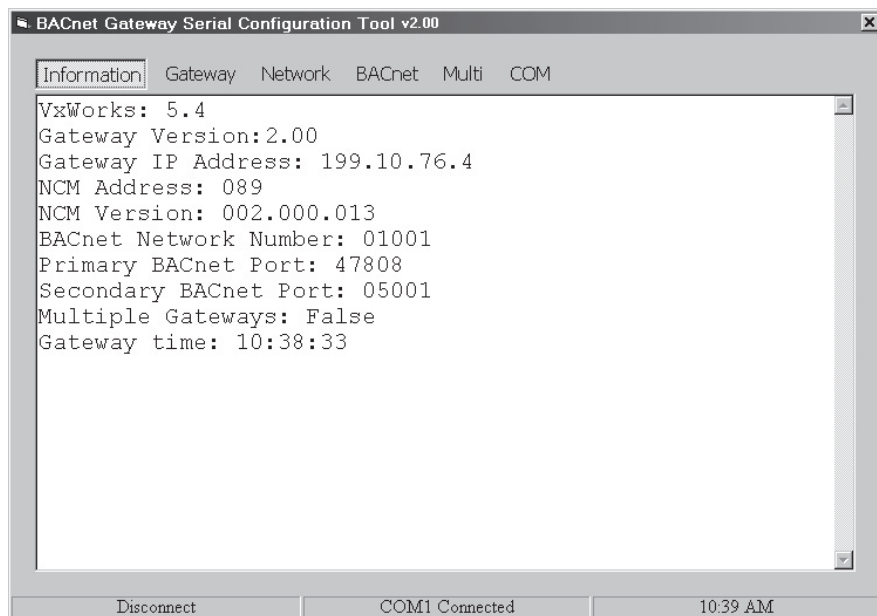


Figure 3.8-1: The Information Tab

3.9 SOFTWARE OPERATION

On bootup, the Gateway autodiscovers all devices (panels, NCSs, NCAs, etc...) and objects (detectors, modules, panels circuits, zones, loops, battery, AC Power, Ground, etc...) on **NOTI•FIRE•NET™** and creates BACnet objects per configuration.

Devices and objects are given names. Below are some format examples:

- An AFP1010 as node 142: .Name = 142AFP1010 (BACnet Device Object)
- An AM2020 as node 120: .Name = 120_AM2020 (*_ denotes spaces*) (BACnet Device Object)
- An NFS640 as node 234: .Name = 234_NFS640 (BACnet Device Object)
- An NCM as node 11 connected to BACnet GW: .Name = 011_ _ BACGW (BACnet Device Object)
- (Detector) Loop 5, Detector 83: L005D083 (BACnet Life Safety Point or Multistate Input Object)
- (Module) Loop 9, Module 120: L009M120 (BACnet Life Safety Point or Multistate Input Object)
- (Zone) Zone 134: ZONE0134 (BACnet Life Safety Zone or Multistate Input Object)
- (Zone) Zone 1003: ZONE1003 (BACnet Life Safety Zone or Multistate Input Object)
- Any Node, Loop 5, Control Module 12: L005C012 (BACnet Binary Output Object)
- (Panel Internal Devices)--LOOP 8, LOOP10, BATTERY, ANNUN021, ACPOWER, PANEL (BACnet Life Safety Point or Multistate Input Object)

SECTION FOUR: ADMINISTRATIVE OPERATIONS

4.1 TELNET

Telnet is used to monitor network traffic and other pertinent system information. Using Telnet as a diagnostic tool, you can determine which nodes are communicating with the BACnet Gateway.

To begin a Telnet session, Click on **Start, Run**. Then, type Telnet in the Open field, and the Telnet screen will be displayed (see Figure 4.1-1).

In order to save all data being received in a Telnet session, you must activate logging by selecting **T**erminal, **S**tart **L**ogging. The application will prompt you to create a log file and save it to the desired location.



NOTE: For more information about operating the Telnet application, refer to its corresponding help file.

```
Telnet - 199.62.76.71
Connect Edit Terminal Help

UxWorks login: target
Password:

-> Trouble Off -- Complete NFN event for L001M013
outgoing: L001M013
Trouble Off -- Complete NFN event for L001D051
outgoing: L001D051
Trouble Off -- Complete NFN event for L001D052
Trouble Off -- Complete NFN event for L001D053
outgoing: L001D052
outgoing: L001D053
Trouble Off -- Complete NFN event for L001D055
Trouble Off -- Complete NFN event for L001D056
Trouble Off -- Complete NFN event for L001D057
outgoing: L001D055
outgoing: L001D056
outgoing: L001D057
Trouble Off -- Complete NFN event for L001D058
Trouble Off -- Complete NFN event for L001D065
Trouble Off -- Complete NFN event for L001D066
outgoing: L001D058
outgoing: L001D065
outgoing: L001D066
Trouble Off -- Complete NFN event for L001D059
Trouble Off -- Complete NFN event for L001D060
```

Figure 4.1-1: Telnet Session

4.2 FTP

A backup should be performed any time devices are added or taken off the **NOTI•FIRE•NET™** network. FTP is used for backing up the Gateway's database and for making upgrades in the field.

HOW TO BACKUP

- * Use Command prompt if you have Windows 2000 or Windows NT.
- * Use MS DOS prompt if you have Windows 98.

1. Dial into the Gateway by specifying its IP address. The syntax for this command is: `ftp [IP address]`
2. At the next prompt, enter the user name; the default is "target."
3. Enter the password; the default is "password."



NOTES: Refer to section 3.4 for details on changing the user name and password.

This procedure backs up information in the Gateway database, not Serial Configuration Tool settings. Configuration settings are stored in flash memory of the Gateway PC board.

4. Access the Gateway's directory using the following command: "`cd /ata1`", then hit the ENTER key. The system will then return a message indicating that the directory was changed.
5. Type "`dir`," then hit the ENTER key. This displays a list of files in this directory.
6. Change to binary mode by typing in "`binary`," then hitting the ENTER key.
7. The file that you want to back up is "`objects.dat`." The syntax for this copy command is: "`get /ata1/[filename] [destination drive letter]:\[filename]`"
 - Filename will be `objects.dat`.
 - The destination drive letter can either be a hard drive or floppy drive on the current computer or a drive on another computer on the network.

```
Microsoft Windows [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ftp 199.62.76.71
Connected to 199.62.76.71.
220 UxWorks (5.4) FTP server ready
User (199.62.76.71:(none)): target
331 Password required
Password:
230 User logged in
ftp> cd /ata1
250 Changed directory to "/ata1"
ftp> dir
200 Port set okay
150 Opening ASCII mode data connection
size      date           time          name
-----
472299    May-17-2001   09:54:24     BOOTROM.SYS
2119674   May-17-2001   07:55:58     UXWORKS
10542     Jan-01-1980   00:00:00     OBJECTS.DAT
0         Jan-01-1980   00:00:00     OBJECTS.FLG

226 Transfer complete
ftp: 309 bytes received in 0.00Seconds 309000.00Kbytes/sec.
ftp>
```

```
250 Changed directory to "/ata1"
ftp> dir
200 Port set okay
150 Opening ASCII mode data connection
size      date           time          name
-----
472299    May-17-2001   09:54:24     BOOTROM.SYS
2119674   May-17-2001   07:55:58     UXWORKS
10542     Jan-01-1980   00:00:00     OBJECTS.DAT
0         Jan-01-1980   00:00:00     OBJECTS.FLG

226 Transfer complete
ftp: 309 bytes received in 0.00Seconds 309000.00Kbytes/sec.
ftp> binary
200 Type set to I, binary mode
ftp> get /ata1/objects.dat c:\objects.dat
200 Port set okay
150 Opening BINARY mode data connection
226 Transfer complete
ftp: 10542 bytes received in 0.15Seconds 70.28Kbytes/sec.
ftp> get /ata1/objects.flg c:\objects.flg
200 Port set okay
150 Opening BINARY mode data connection
226 Transfer complete
ftp>
```

Figure 4.2-1: The BACnet Tab

APPENDIX A: PIC STATEMENT

BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE)

(This appendix is part of this Standard and is required for its use.)

Applications Software Version: 2.0

Firmware Revision: 2.0

BACnet Protocol Revision: 1.2

Product Description:

This product presents Notifier Fire Panel and Annunciator nodes (operating as part of a **NOTI•FIRE•NET™** network or stand-alone) and their associated objects as BACnet objects. Event notification for Alarms, Troubles and other states are sent to registered BACnet clients.

BACNET STANDARDIZED DEVICE PROFILE (ANNEX L)

<input type="checkbox"/>	BACnet Operator Workstation (B-OWS)
<input type="checkbox"/>	BACnet Building Controller (B-BC)
<input checked="" type="checkbox"/>	BACnet Advanced Application Controller (B-AAC)
<input type="checkbox"/>	BACnet Application Specific Controller (B-ASC)
<input type="checkbox"/>	BACnet Smart Sensor (B-SS)
<input type="checkbox"/>	BACnet Smart Actuator (B-SA)

BACNET INTEROPERABILITY BUILDING BLOCKS SUPPORTED (ANNEX K)

DS-RP-B	DS-RPM-B
DS-WP-B	DS-WPM-B
AE-N-I-B	AE-ACK-B
AE-ASUM-B	AE-INFO-B
DB-DDB-B	DM-DDB-B
DM-DOB-A	DM-DOB-B
DM-LM-B	DM-OCD-B

SEGMENTATION CAPABILITY

- Segmented requests supported, Window Size 1024 max
- Segmented responses supported, Window Size 1024 max

STANDARD OBJECT TYPES SUPPORTED

Object Type	Supported Features	
Life Safety Point	Delete Objects	Optional Properties required for intrinsic reporting
Life Safety Zone	Delete Objects	Optional Properties required for intrinsic reporting
MultiState Input	Delete Objects	Optional Properties required for intrinsic reporting
Binary Outputs	Delete Objects	Optional Properties required for intrinsic reporting
Notification Class Device	Delete Objects	Optional Properties required for intrinsic reporting

DATA LINK LAYER OPTIONS

<input checked="" type="checkbox"/>	BACNET IP, (ANNEX J)
<input checked="" type="checkbox"/>	BACNET IP, (ANNEX J), FOREIGN DEVICE
<input type="checkbox"/>	ISO 8802-3, ETHERNET (CLAUSE 7)
<input type="checkbox"/>	ANSI/ATA 878.1, 2.5 MB. ARCNET (CLAUSE 8)
<input type="checkbox"/>	ANSI/ATA 878.1, RS-485 ARCNET (CLAUSE 8), BAUD RATE(S) _____
<input type="checkbox"/>	MS/TP MASTER (CLAUSE 9), BAUD RATE(S): _____
<input type="checkbox"/>	MS/TP SLAVE (CLAUSE 9), BAUD RATE(S): _____
<input type="checkbox"/>	POINT-TO-POINT, EIA 232 (CLAUSE 10), BAUD RATE(S): _____
<input type="checkbox"/>	POINT-TO-POINT, MODEM, (CLAUSE 10), BAUD RATE(S): _____
<input type="checkbox"/>	LONTALK, (CLAUSE 11), MEDIUM: _____
<input type="checkbox"/>	OTHER: _____

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)

- ☒ Yes
- ☐ No

Networking Options:

- ☒ Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
BACnet to Proprietary ARCnet Fire Network
- ☐ Annex H, BACnet Tunneling Router over IP
- ☐ BACnet/IP Broadcast Management Device (BBMD)

Does the BBMD support registrations by Foreign Devices?

- ☐ Yes
- ☒ No

Character Sets Supported:

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

<input checked="" type="checkbox"/>	ANSI X3.4
<input type="checkbox"/>	ISO 8859-1
<input type="checkbox"/>	ISO 10646 (USC-2)
<input type="checkbox"/>	ISO 10646 (USC-4)
<input type="checkbox"/>	IBM™/Microsoft™ DBCS
<input type="checkbox"/>	JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:

Notifier Fire and Annunciator nodes compatible with **NOTI•FIRE•NET™** v4.0 and later operating in a network or stand-alone configuration.

NOTES

GLOSSARY

Telnet - An Internet protocol that allows you to communicate directly with another computer on the Internet by specifying the host name, port and terminal type.

FTP - File Transfer Protocol, used to back up the BACnet Gateway database and download firmware for field upgrades.

BACnet Gateway - A Notifier PC board interface that allows the **NOTI•FIRE•NET™** network to communicate with a BACnet network.

NCM-W/F - Network Control Module, a network interface enabling the BACnet Gateway to communicate with other **NOTI•FIRE•NET™** devices.

NOTI•FIRE•NET™ - The network of Notifier Fire Alarm Control Panels.

Ethernet - Local area network protocol.

COM Port - EIA-232 port(s) found on a PC or laptop, used for serial communications.

IP Address - Logical address designating a node on an IP network with the format *NNN.NNN.NNN.NNN*, where NNN groups can be between 0 and 255.

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